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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

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ART UNIT

PAPER NUMBER

2834
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/297,570

Applicant(s)

Nygren et al.

Examiner

Joseph Waks

Group Art Unit

2834



☒ Responsive to communication(s) filed on Apr 3, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 13-26 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 13-15, 17, and 21-26 is/are rejected.

☒ Claim(s) 16 and 18-20 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☒ The proposed drawing correction, filed on Apr 3, 2000 is ☐ approved ☒ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2834

DETAILED ACTION

Specification

1. The substitute specification filed on May 30, has not been entered to replace the erroneously entered "clean copy" filed on Jun 24, 1999.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on April 3, 2000 have been not approved by examiner. The indicated reference number 2000 is not in the specification. Figure 10 is not included in the brief description of drawings and the shown detail is not identified in the drawing by an element number and not described in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. **Claim 22** is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Art Unit: 2834

Re claim 22, the recited limitation of the fault current control device being configured to mechanically stabilize the set of winding is not described in specification or shown in drawings in such way that one skill in the art will be able to understand the relation between the claimed device comprising the elongated member of electrically conducting material connected to the ground and disposed in the end winding region and the mechanical stability of the windings in this region, in particular that applicants did not provide any criteria for what applicants consider as the mechanically stabilized winding and what configuration of the device provide the required stabilization.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claim 26** is rejected under 35 U.S.C. 102(b) as being anticipated by **Nikitin et al.** (US 4,429,244).

Nikitin et al. disclose in Figure 2 invention as claimed a rotating electric machine , in particular a generator for high voltage operation comprising a stator, a set of windings 5 having high-voltage cables 6 (Re column 3, lines 34-36) enclosing an electric field in the set of windings,

Art Unit: 2834

and means 23 and 24 for controlling a fault current and for conducting the fault current to ground in an end winding region.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 13-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Anderson et al. (US 3,670,192)**.

Nikitin et al. disclose in Figure 2, a rotating electric machine, in particular a generator for high voltage operation comprising a stator, a set of windings 5 having high-voltage cables 6 (Re column 3, lines 34-36) enclosing an electric field in the set of windings, and the windings 5 having an end winding regions with an elongated member of an electrically conductive material. The rotor that is not directly disclosed by **Nikitin et al.** is inherent to the disclosed high voltage generator. However, **Nikitin et al.** fail to disclose a fault current control device including the elongated member of an electrically conductive material connected to ground.

Anderson et al. disclose in Figure 1 a rotating electrical machine having a fault current control device including a number of elongated members 8, 9 of an electrically conductive

Art Unit: 2834

material connected to ground and disposed in the end winding region (Re. Abstract, and line 1 and specification column 2, lines 59-67) for the purpose of preventing a glow discharge from the coil ends.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the as taught by **Nikitin et al.** and to provide a fault current control device including the elongated member of an electrically conductive material connected to ground and disposed in the end winding region as taught by **Anderson et al.** for the purpose of preventing a glow discharge from the coil ends.

9. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al.** (US 4,429,244) in view of **Anderson et al.** (US 3,670,192) as applied to claim 13 above.

The combined machine discloses all elements essentially as claimed. However, it fails to disclose the elongated member including a plurality of small conductors combined into a bundle having a predetermined cross-sectional area configured to deflect short-circuit currents arising during a fault event.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined machine and to provide the elongated member including a plurality of small conductors combined into a bundle having a predetermined cross-sectional area for the purpose of meeting loads in large size generators and to reduce the eddy currents since it require a mere duplication of the essential working parts of a device. It has been held that mere

Art Unit: 2834

duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

10. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Anderson et al. (US 3,670,192)** as applied to claim 13 above and further in view of **Auclair (US 5,429,532)**.

The combined rotating electrical machine includes all elements essentially as claimed. However, it fails to disclose a fault control device comprising a flexible wire.

Auclair teaches in Figure 1-3 and 7, and in column 2, lines 52-54 a cable fault control device comprising a conventional flexible wire 16 or 18 serving as a ground connector.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined electric machine and to provide the fault current control with the conventional flexible wire as taught by **Auclair** for the purpose of allowing a ground connection easy to use in limited space.

11. **Claim 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Anderson et al. (US 3,670,192)** as applied to claim 13 above and further in view of **Elton et al. (US 5,036,165)**.

The combined rotating electrical machine teaches all elements essentially as claimed, including the high-voltage flexible cables having a current carrying conductor disposed within an insulating part. However, it fails to disclose the high-voltage flexible cable having a current carrying conductor disposed within an inner layer of material having semiconducting properties ,

Art Unit: 2834

wherein the inner insulating layer being disposed within a solid insulating part disposed within an outer layer of semiconductive material.

Elton et al. teach in Figure 1 a high-voltage flexible cable 100 having a current carrying conductor 102 disposed within an inner layer 104 of material having semiconducting properties, wherein the inner insulating layer 104 being disposed within a solid insulating part 106 disposed within an outer layer of semiconductive material 110 for the purpose of providing a layer in intimate contact with insulated windings of an electrical machine, and being in contact with ground to bleed of charges thereof and to minimize the possibility of a corona discharge.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined electric machine and to provide the high-voltage flexible cable having a current carrying conductor disposed within an inner layer of material having semiconducting properties, wherein the inner insulating layer being disposed within a solid insulating part disposed within an outer layer of semiconductive material as taught by **Elton et al.** for the purpose of providing a layer in intimate contact with insulated windings of an electrical machine, and being in contact with ground to bleed of charges thereof and to minimize the possibility of a corona discharge.

12. **Claims 24 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Anderson et al. (US 3,670,192)** as applied to claim 13 above and further in view of **Simmons et al. (US 4,997,995)**.

Art Unit: 2834

The combined rotating electrical machine teaches all elements essentially as claimed including the winding being configured to carry a high-voltage up to 110 kV (Re Nikitin et al., column 1, lines 50-64). However, it fails to disclose the windings being configured to operate an inclusive high voltage range of 400 kV through 800 kV.

Simmons et al. teach in Figure and in column 3, lines 7-14 the structure and method of making an extra- high-voltage flexible cable rated for 400 kV and above with a reduced insulation thickness for the purpose of maintaining an acceptable cable diameter.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined electric machine and to provide the high-voltage flexible cable rated for 400 kV and above with a reduced insulation thickness as taught by **Simmons et al.** for the purpose of maintaining an acceptable cable diameter as required for stator winding. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to optimize the insulation thickness as required for 800 kV winding, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

13. **Claims 16 and 18-20** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2834

Re claim 16, the feature of the fault current control device including the slotted elongated member reducing eddy-current losses, in combination with the other limitations present, are neither disclosed or taught by the prior art of record.

Re claims 18-20, the feature of the spacer made of resilient, electrically conducting material applied between high-voltage cables in the end winding region positioned to contact respective outer semi-conductive layers of the high-voltage cables, in combination with the other limitations present, are neither disclosed or taught by the prior art of record.

Response to Arguments

14. Applicant's arguments filed on April 3, 2000 have been fully considered but they are not persuasive.

Re claims 13-15, 21 and 26, applicants arguments with respect to Nikitin et al. (US 4,429,244) not meeting the limitation of the high voltage cables that enclose an electric field in a set of winding are respectfully traversed by examiner. Examiner directs applicants attention to the basic laws of electricity under which any electric conductor in a closed circuit encloses an electrical field when a voltage differential is applied to the circuit. However, in an alternating electrical field, and particularly during transient conditions, alternating magnetic fields induced by the main electric field further induce electric fields in the atmosphere surrounding the cable (outside the cable) causing the well known corona effect. Therefore, "absolute" or "total" enclosing of the electrical field in the conductor under alternate current condition is not achievable

Art Unit: 2834

and is not claimed by applicants. Obviously such “absolute” or “total” enclosing of the electrical field in the conductor by itself renders is contradictory to the applicants claimed invention that calls for a fault current control that grounds the winding ends insulation. With the electric field absolutely enclosed in the cable at all working conditions the fault current control by grounding has no utility since such a system, in order to operate, requires a voltage difference between the outer surface of the cable insulation jacket and the ground. In view of this, the cable disclosed by Nikitin et al. meet the claimed limitations.

With respect to the argued employment of an uninsulated conductor for grounding it is noted that this feature is not recited in the rejected claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants arguments with respect to the elongated member provided by Anderson were fully considered and correction to the element number indicating the appropriate elongated member are provided in the Office action above.

Applicants arguments with respect to claim 22 are respectfully traversed by examiner. A mere recitation of the device being configured to mechanically stabilize the set of windings in the end region without providing sufficient structure to support the claimed features does not meet the requirements of the 35 U.S.C. 112 paragraph that clearly states that the specification shall contain a written description of the invention in such full, clear, concise, and exact terms as to enable any person skill in art to which it pertains to make and use the same. Such full, clear,

Art Unit: 2834

concise, and exact terms are not provided in the specification nor are supported by the drawings. The mere usage of rods, pipes and alike will not necessary result in a mechanically stabilized structure.

Applicants arguments with respect to claim 23, and in particularly with respect to US Patent No. 5,036,165 to Elton et al. are not persuasive and vague. Applicants "substitution" of Elton No. 5,036,165 with Elton No. 4,853,565 is inappropriate and misleading. Both, Elton No. 5,036,165 and Elton No. 4,853,565 clearly address the high powered dynamoelectric machines and in particular the stationary armature bars or windings disposed in the slots of a stator core (Re Background of the Invention). While the Elton No. 4,853,565 provides a wild range of application for the disclosed conductors, the Elton No. 5,036,165 concentrates solely on heavily insulated windings of the stator (Re column 1, lines 25-35) and in this context the disclosed cable is clearly related to the stator windings. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The teaching of use of high voltage cables for dynamoelectric machines by Nikitin combined with teaching of the cable structure of Elton et al. No. 5,036, 165 disclose the rotating electrical machine as claimed.

Art Unit: 2834

15. Applicant's arguments with respect to claims 14 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Communication

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Waks whose telephone number is (703)308-1676 . The examiner can normally be reached on Mondays thru Fridays from 8:00am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez, can be reached on (703) 308-1371. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-5841.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



JOSEPH WAKS
PATENT EXAMINER
TC-2800

JW
June 7, 2000